The truth of the final statement of the theorem emerges when to k are assigned successively the values $1, 2, \cdots, m-1$, and when it is recalled that a sufficient condition that the manifold defined by the equations (A) has no singular points in R is that the matrix M_m is of rank m at all points of the manifold in R.

HARVARD UNIVERSITY

ON THE FOUNDATIONS OF GENERAL INFINITESIMAL GEOMETRY*

BY HERMANN WEYL

In connection with a seminar on infinitesimal geometry in Princeton, in which I took part, it seemed desirable to clarify the relations between the work of the Princeton school and that of Cartan.

With a group $\mathfrak{G}$ of transformations in m variables ξ is associated, in accordance with Klein's Erlanger Program, a homogeneous or plane space $\mathfrak{R}$ of the kind $\mathfrak{G}$; a point of $\mathfrak{R}$ is represented by a set of values of the "coordinates" ξ^α and figures which go into each other on subjecting the coordinates to a transformation of $\mathfrak{G}$ are to be considered as fully equivalent. The transformations of $\mathfrak{G}$ give at the same time the transition between two allowable "normal" coordinate systems in $\mathfrak{R}$. If we have two spaces $\mathfrak{R}$, $\mathfrak{R}'$ of the kind $\mathfrak{G}$ and set up a definite normal coordinate system in each of them, then such a transformation can be interpreted as an isomorphic representation of $\mathfrak{R}$ on $\mathfrak{R}'$. $\mathfrak{G}$ is assumed to be transitive.

Cartan† developed a general scheme of infinitesimal geometry in which Klein's notions were applied to the tangent plane and not to the n-dimensional manifold M itself. The

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† E. Cartan, *Sur les variétés à connexion affine et la théorie de la relativité généralisée*, Annales de l'École Normal Supérieure, vol. 40 (1923), pp. 325–412; in particular, p. 383, etc.